REMARKS

Claim Rejections – 35 U.S.C. §103(a)

The Examiner rejected claims 1-4, 6-13, 15-21 and 23-24 under 35 USC 103(a) as being unpatentable over Chin (U.S. Patent No. 6,608,625) in view of Crook (U.S. Patent Application Publication 2003/0093623). Applicant respectfully disagrees with the Examiner's rejection. In particular, both Chin and Crook fail to teach or suggest a "pointer cache system further comprises a decoupling section to create a non-blocking pointer cache system," as claimed.

In order to further optimize performance, the cache tags are separated from the cache data by a decoupling FIFO. This, in essence, makes the cache a non-blocking cache. The cache is therefore able to hide some of the memory latency in fetching the bin pointer data (requests to memory are pipelined). When there is a cache hit, the cache address where the data is located is placed into the decoupling FIFO. This allows the cache tag block to immediately start working on the next request before the data for the first request is even used. Likewise, if there is a cache miss, the request for the missed data can be made. While the request is waiting in the decoupling FIFO (for the memory latency to return the data needed), other miss requests can be processed, further optimizing the cache performance. This cache structure, however, requires special handling when an out-of-memory exception occurs.

Applicant respectfully disagrees that Chin discloses a pointer cache system further comprises a decoupling section to create a non-blocking pointer cache system. In particular, the cache does not provide for non-blocking as claimed in the invention. Applicant disagrees with the Examiner's assertion that there is motivation to combine Crook with Chin. In particular, the cache disclosed in Crook is not designed to improve all cache performances, specifically a binned system. Crook fails to address at all the particulars of improving cache performance for a bin pointer and state caching system.

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Furthermore, both Chin and Crook, alone or in combination, fail to teach or suggest "pointer cache system further comprises a decoupling section to create a non-blocking pointer cache system." As noted in the present application on page 11:

> The pointer cache system may perform a recovery operation if binning is resumed after an out-of-memory exception causing a partially binned scene to be rendered. The recovery operation may be as follows. Accesses to and from the cache data array section 130 may be blocked. Then, all of the bins may be closed which corrupts the cache data. All of the tags within the cache tag array section 110 may be invalidated. The pointer cache 100 may then wait for a "resume" command at which point a new BPL may be created with a new bin list for the new scene. At that point, for each entry in the cache decoupling FIFO section 120, the following operations may occur. The entry may be read out of the decoupling FIFO section 120 to determine which cache location it references. Based on the cache location, the tag structure may be read and the respective tag data may be returned to the cache tag array section 110. If the tag is valid, then the data may be fetched from the cache data array section 130 making sure to place the data in the same cache location it was in previously. That tag may then be validated and the entry may be placed back into the cache decoupling FIFO section 120. Accesses to and from the cache data array section 130 may then be unblocked.
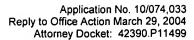
It is therefore respectfully requested that the Examiner withdraw his rejection of the pending claims.

CONCLUSION

In view of the foregoing, it is respectfully asserted that all of the claims pending in this patent application are in condition for allowance.

The required fee for a two month extension of time is enclosed. Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #02-2666.

If the Examiner has any questions, she is invited to contact the undersigned at (323) 654-8218. Reconsideration of this patent application and early allowance of all the claims is respectfully requested.

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Respectfully submitted,

Farzad E. Amini, Reg. No. 42,261

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12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025
(310) 207-3800

CERTIFICATE OF MAILING
I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail with sufficient postage in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P. O. Box 1450, Alexandria, Virginia 22313-1450 on August 30, 2004.

Jean Svoboda

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